

Strategies for Teaching Aural Recognition

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Part One: Music Learning Theories

This paper examines the relationship between musical knowledge and teaching methods, particularly related to aural skill development. It discusses theories of musical knowledge and applies them in teaching strategies. Bibliographic references and additional resources are provided in the appendices.

I. Music Cognition

Over the last four decades, music educators have investigated the nature of musical knowledge and how it can enlighten teaching methods. Divergent opinions are held by major philosophers (Elliott, Reimer) and cognitive psychologists (Gardner, Perkins) regarding the nature of musical knowledge and whether music is a product or a process. Their theories, and those of many others, are discussed below.

Knowledge

Knowledge is the lowest level of thinking, according to Benjamin Bloom's taxonomy. Students have knowledge when they can accurately state facts or identify an object. To conceptualize knowledge is more complicated. Educators decide whether to teach only facts, or to have students manipulate those facts with more sophisticated critical thinking skills such as analysis, synthesis and evaluation. Initially, facts are necessary before any reasoning can be done. Perkins promotes teaching facts and the ability to use them at the same time. By contrast, E.D. Hirsch generated lists of factual knowledge he felt should be taught to every "culturally literate" individual.

Isolated facts alone become inactive knowledge when they are not applied to critical, reflective problem solving. Some music educators may engage in fact-based teaching, without considering how that knowledge will be used. Evaluating a student's ability to retain facts is temptingly neat and simple. A better teaching model moves beyond mere facts and engages students, who leave the classroom with the ability to analyze and solve problems on their own.

Musical Knowledge

The way we conceptualize knowledge in the general sense informs our understanding of musical knowledge and how it comes into play during listening and performance. If musical knowledge goes beyond the ability to recite facts and extends into the ability to operate on musical information through performance, the charge to music educators is to teach students to think critically in addition to developing basic musical skills. It is possible to structure learning experiences in lessons and rehearsals through which students identify problems, critically evaluate them, and work together to solve them. If ensemble players are expected to blindly follow the conductor, there is no room for decision-making or independent thought. In skill-based music curricula students memorize information, but are not challenged to use that information to solve or pose problems. Any curriculum that focuses on performance without the integration of history and theory, or without providing opportunities for students to pose or to solve problems is limited in its effectiveness. It is a challenge to create a rehearsal environment where students apply knowledge to common problems and solve those problems with analytical and evaluative thinking and action, while preparing for the next concert.

A More Encompassing Philosophy

David Elliott's praxial philosophy of music education distinguishes between musical works and musical process in relation to the enlightenment and postmodernism. In Europe, from the middle of the eighteenth century until the rise of postmodernism, a piece of music was conceived as an entity, much like a work of visual art. Some educators still focus on the product rather than the process. According to Elliott, to look at or listen to music and focus exclusively on its structural or aesthetic qualities, in abstraction from its context of social use and production, is contrary to what music making is all about. In the praxial philosophy, music making is central.

Musical Knowledge and Constructivist Theory

Jerome Bruner proposes a view of constructivist learning theory in which the teacher is aware of the structures students bring to the learning experience, and builds on those structures. Embedded in Bruner's theory are the pursuit of excellence and the student's emotional connection to the learning experience. In *Music Matters*, David Elliott writes, "**we don't hear music as it is, we hear it as we are.**" This places the student at the center of any educational strategy.

It is a common misconception that the nature of music study involves merely learning skills related to performance or the rote memorization of facts about the music. The nature of musical knowledge is complex and includes critical and reflective cognitive processes such as thinking, knowing, and listening. An effective music teaching philosophy is primarily concerned with the thought processes in which students engage while making music and listening.

Further Sources of Information

Members of the Music Cognition Group of the Society for Music Theory actively conduct research in this field. Some of the topics addressed in the study of music cognition are learning and development, culture and biology, music and language, perception of sound, consonance and dissonance, emotion and meaning, composition and improvisation, melodic organization, listening to music, and performing music. The Music Cognition Resource Center at the Ohio State University site at <http://dactyl.som.ohio-state.edu/Resources/> is a large repository of information. The *Music Cognition Handbook: A Glossary of Concepts* by David Huron is located at <http://dactyl.som.ohio-state.edu/Music838/glossary.html>.

See Appendix A for a bibliography of print resources on music cognition.

II. Music Learning Theories

Constructivist Theories

Constructivism is a catchword in educational circles, and attempts to explain how people learn and the nature of knowledge. As music educators, we do need to think about our work in relation to theories of learning and knowledge. It is not a new concept, the core ideas having been clearly enunciated by John Dewey among others. There is, however, growing acceptance of these ideas, along with new research in cognitive psychology to support it.

The central idea is that learners construct knowledge for themselves. Each learner individually constructs meaning as he or she learns. Constructing meaning is learning. There are two major ramifications of this perspective. The first is that we must focus on the learner in thinking about learning, not on the subject matter. The second is that there is no knowledge independent of the meaning attributed to experience, constructed by the learner.

If we accept constructivist theory (as did Dewey, Piaget, Vigotsky and others), we relinquish Platonic and all realistic views of epistemology. There is only the knowledge we construct for ourselves as we learn. To learn is not to understanding the true nature of things. It is a personal and social construction of meaning out of an array of sensations with no order or structure other than the coherence that we fabricate.

The basic premise here is that there is no such entity as a *Ding an sich*, whether or not we can perceive it. Realists still refute Bishop Berkeley, as did Samuel Johnson, by kicking the stone and feeling real pain. What difference does it make whether we consider knowledge to be about external things, or whether we consider knowledge to be of our own making? As music educators, if our epistemological views dictate our pedagogic views, it makes a significant difference.

As realists, we organize musical information in the most rational way possible and present it to the learner. This view allows us to provide the learner with hands-on learning activities and ways to manipulate musical objects, while the intent remains to make clear the structure of music independent of the learner. We help learners understand the music, without asking them to construct it for themselves. Constructivist theory requires that we stop trying to explain the structure of music, and let each student create his or her way of knowing it. If we accept the constructivist position we must follow a pedagogy that provides learners with the opportunity to interact with sounds and construct their own relationships.

We struggle with the belief that learners will construct meaning that we find acceptable, and feel the need to construct meaning for them. We often structure situations that do not allow learners to freely carry out their own mental actions, ones that guide them to our ideas about the meaning of experience. The tension between our desire as teachers to teach the truth (our personal version of reality), and our desire to let learners construct their own world causes us to think seriously about epistemology and pedagogy.

Constructivist Learning

Here are some principles of constructivist thinking to keep in mind as we consider teaching strategies.

1. Learning is a process in which the learner uses sensory input and constructs meaning out of it. It is not the passive acceptance of knowledge which exists externally, but involves engaging with the world. (Dewey called this active learning).
2. People learn to learn as they learn: learning consists both of constructing meaning and constructing systems of meaning. Each meaning we construct makes us better able to give meaning to other sensations which can fit a similar pattern.
3. The crucial action of constructing meaning happens in the mind. Physical actions may be necessary for learning, but are not sufficient; we need to provide activities which engage the mind as well as the body. (Dewey called this reflective activity).
4. Learning involves language: the language we use influences learning. Researchers have noted that people talk to themselves as they learn, and that language and learning are inextricably intertwined.
5. Learning is a social activity: our learning is intimately associated with our connection with other human beings, our teachers, our peers, and everyone else. Much of traditional education is directed towards isolating the learner from social interaction and towards seeing education as a one-on-one relationship between the learner and the objective material to be learned. In contrast, progressive education (according to Dewey) recognizes the social aspect of learning and uses interaction with others, and the application of knowledge as an integral aspect of learning.
6. Learning is contextual: we do not learn isolated facts and theories in some abstract mind space separate from our lives: we learn in relation to what we know and believe.
7. We need knowledge to learn: it is impossible to assimilate new knowledge without building on the structure developed from previous knowledge. The more we know, the more we can learn. Successful

teaching is connected to the state of the learner, providing a path to new information based on each learner's previous knowledge.

8. It takes time to learn: learning is not instantaneous. For significant learning we need to revisit ideas, ponder them, try them out, play with them and use them.

9. Motivation is a key component in learning. It includes understanding how the knowledge can be used, and therefore has value.

A key point for music educators is that physical involvement is highly desirable for learners in most situations, but it alone is not sufficient. All hands-on activities must also be minds-on. They should provide something to think about as well as something to do. These influential principles of constructivism can effectively be applied to music learning. The principles appeal to an enlightened view of learning and knowledge, but they may conflict with traditional pedagogical practices. This does not mean that traditional methods are unsound or ineffective.

III. The Concept of Audiation

Edwin E. Gordon, an American music educator (B. 1928) developed a sequence for music instruction in the 1970s, culminating in the formulation of his music learning theory. He coined the term "audiation" to refer to the goal of music instruction: inner hearing (hearing music in the mind with understanding, when no sound is present). His music learning theory is an explanation of how we learn when we learn music. Similar to the classic European pedagogies, Gordon supports the sound-before-symbol approach to music instruction. As in the development of language, learners listen to tonal and rhythm patterns, imitate them, and then read and write them. Audiation occurs when learners have had ample listening experiences, so that they can see a notated rhythm or melody and make musical sense of it, "hearing" it internally.

Gordon's theory of music learning suggests a hierarchy of musical skill-building that begins with aural perception and discriminative listening, progresses through the development of music reading and writing, improvisation, and culminates in a theoretical understanding of music.

Audiation is not the same as aural perception, which occurs simultaneously with the reception of sound through the ears. It is a cognitive process by which the brain gives meaning to musical sounds. Audiation is the musical equivalent of thinking in language. When we listen to someone speak we must retain in memory their vocal sounds long enough to recognize and give meaning to the words the sounds represent. Likewise, when listening to music we are at any given moment organizing in audiation sounds that were recently heard. We also predict, based on our familiarity with the tonal and rhythmic conventions of the music being heard, what will come next. Audiation, then, is a multistage process.

Although musicians audiate all aspects of musical sound, including timbre, volume, and style, music learning theory is concerned specifically with the tonal and rhythm dimensions of music. Teaching methods are designed to help students develop their ability to audiate tonal content and rhythm content. Through development of audiation students learn to understand music. Understanding is the foundation of music appreciation, the ultimate goal of music teaching.

Types and Stages of Audiation

The types of audiation are not hierarchical. Some of the types, however, are preparatory for others.

Type 1 - Listening to familiar or unfamiliar music

Type 2 - Reading familiar or unfamiliar music

Type 3- Writing familiar or unfamiliar music from dictation

Type 4 - Recalling and performing familiar music from memory

- Type 5 - Recalling and writing familiar music from memory
- Type 6 - Creating and improvising unfamiliar music
- Type 7 - Creating and improvising unfamiliar music while reading
- Type 8 - Creating and improvising unfamiliar music while writing

As theorized, the six stages of audiation are hierarchical, as each stage prepares for the next. The list below outlines the stages of audiation as they occur in Type 1 of audiation (listening to familiar and unfamiliar tonal patterns and rhythm patterns in familiar and unfamiliar music).

- Stage 1 - Momentary retention
- Stage 2 - Initiating and audiating tonal patterns and rhythm patterns, recognizing tonal/rhythmic features
- Stage 3 - Establishing objective or subjective tonality and meter
- Stage 4 - Consciously retaining in audiation tonal patterns and rhythm patterns that we have organized
- Stage 5 - Consciously recalling patterns organized and audiated in other pieces of music
- Stage 6 - Conscious prediction of patterns

Gordon's music learning theory is outlined below, paraphrasing from his own language.

Tonal and Rhythmic Elements

Tonal learning is facilitated by development of a sense of tonality and a vocabulary of tonal patterns. The tonal patterns used in learning sequence activities are organized according to tonality classification (major, minor, modal) and tonal pattern function (tonic, dominant, subdominant). Of the many tonal solfege systems available, the one best suited for developing audiation is the "moveable *do*" system.

Rhythm has three elements. They are macrobeats, microbeats, and melodic rhythm. All three of those elements must be audiated at the same time in order to establish rhythmic syntax.

Skill Learning Sequence

There are two main categories of levels of skill learning sequence: discrimination learning and inference learning. Discrimination learning is rote learning. It takes place when students are conscious of, though they may not fully understand, what they are being taught. A student is conscious of what he is learning because he is being taught by someone else. Inference learning is conceptual learning. It takes place when a student is unconscious of what he is learning because he is teaching himself.

Discrimination learning is of initial primary concern to a teacher because students cannot learn to make inferences unless they have learned how to make and have made discriminations.

Discrimination Learning

In order for students to understand music, they must build a vocabulary of tonal and rhythm patterns, comparable to a vocabulary of words in language. Most discrimination learning consists of students echoing tonal or rhythm patterns sung or chanted by the teacher. The format is call and response, and students may perform as a group or in solo.

Aural/Oral. Aural/oral is the most basic level of skill learning sequence, the foundation upon which all higher level skills are built. Listening is the aural part, while performing, usually singing, is the oral part. Optimum musical development occurs when the two are combined in a continuous loop so that they interact with and reinforce each other.

Verbal Association. At this level, students associate names with the patterns, functions, tonalities, and meters they learned at the aural/oral level. The tonal and rhythm patterns taught at the aural/oral level are learned with appropriate tonal solfege syllables or rhythm solfege syllables. Verbal association facilitates discrimination between patterns.

Partial Synthesis. At the aural/oral and verbal association levels, students learn tonal and rhythm patterns individually. The teacher performs a series of familiar tonal or rhythm patterns without solfege and without first establishing tonality, and students are able to identify the tonality or meter of the series. The purpose is to assist them in recognizing for themselves familiar tonalities and meters. As a result of acquiring partial synthesis skill, a student is able to listen to music in a sophisticated, musically intelligent manner.

Symbolic Association. At this level, students learn to read and write music notation by associating the sound and solfege of the patterns they learned at the aural/oral and verbal association levels with the notation for those patterns. The process is one of recognition, not decoding. As the teacher points to a pattern, the students are simply told "What you are audiating looks like that." Students are not taught the letter names and time values of individual notes, nor the definitions of key signature and other symbols. These are taught at the theoretical understanding level of inference learning.

Composite Synthesis. At the partial synthesis level, students are able to give syntax to a series of familiar tonal or rhythm patterns. At composite synthesis, students read and write a series of tonal and rhythm patterns with the ability to identify the tonality or meter of the series.

Inference Learning

Students are not taught by rote at this level; they make their own discoveries. As a result of their experience with familiar patterns at various levels of discrimination learning, students are able to identify, create with, and improvise unfamiliar patterns in inference learning. Whereas in discrimination learning a teacher teaches a student both *what* to learn and *how* to learn it, in inference learning a teacher teaches a student only *how* to learn. The student teaches himself *what* he learns.

Generalization. Generalization has three sublevels: aural/oral, verbal, and symbolic. The sublevels are analogous to the corresponding levels of discrimination learning, except, that the student is able to audiate unfamiliar patterns by comparing them to the familiar patterns he learned by rote.

Creativity/Improvisation. In order to create or improvise, the student must have something to create or improvise *with*. The tonal and rhythm patterns learned in discrimination learning comprise the content the student uses to form his own unique musical ideas in creativity and improvisation. Creativity is easier than improvisation because there are more restrictions on a performer when he improvises than when he creates.

Theoretical Understanding. Music theory explains why music is audiated, performed, read, written, created, and improvised as it is. It is to music what grammar and linguistics are to language. Taught in proper sequence, theoretical understanding can strengthen what was learned at the lower levels of music learning. In language learning, grammar and the parts of speech are not taught until learners have developed considerable skill in thinking, speaking, improvising (conversing), reading, and writing in their native tongue. The same should be true in music teaching.

Unfortunately, music theory is often taught to students who do not audiate. Such a sequence can only hinder audiatational development. For most efficient learning, ideally students should not be introduced to theoretical understanding until they have achieved all previous levels of discrimination and inference learning to the extent that their music aptitudes will allow.

At the theoretical understanding level, students learn information commonly taught in traditional methods as a readiness for music reading, such as the names of lines and spaces, time value names, sharps and flats, time signatures, and key signature definitions. They also learn intervals, chord spellings, and other information traditionally taught as music theory.

The official web site for Music Learning Theory and the Gordon Institute for Music Learning (GIML) is at <http://www.giml.org>.

Part Two: Strategies for Teaching Aural Recognition

Good pedagogy dictates that we clearly identify learning objectives and creatively engage students in activities that bring about the desired changes in behavior or thinking. In an integrated theory program, the broad goal is for students to increase their understanding and awareness of the relationship of sounds in time. Aural skills are an intrinsically interrelated component of comprehensive musicianship (CM) training. Any distinction between written skills (part-writing, composition, analysis) and aural skills (dictation, sight singing) is an artificial one. The goal of music theory training is, according to Leonard Meyer (Explaining Music, 1973), “to refine the aural imagination, and to sensitize the cognitive ear.” Bruce Benward called it the seeing ear and the hearing eye. Michael Rogers offers the following diagram as the goal of theory (musicianship) training:



What do we mean by the aural recognition? The word recognition (re-cognition) implies that we transfer existing knowledge from an earlier context or experience; we cannot recognize what we do not already know. There are multiple contexts for learning in music. The music itself provides a momentary context, while the listener brings his or her own experiential context based on the music they have played, sung, heard, or analyzed previously. If we prescribe to a constructivist theory of learning, then this experiential context is a critical factor in devising learning activities. Coherence is based on each student's set of experiences.

It is the musical context that provides meaning for each element or component, and this allows us accurately identify each element in relation to others. At the most basic level of knowledge students identify or label the building blocks of a piece of music. These are studied in the music fundamentals class, and students should be fluent in identifying intervals, triads, key signatures, and other basic facts. Prior experience with music determines what students have learned intuitively, and the ways they process aural stimuli. Aural stimuli are easily identified if related to known patterns that have been embedded since childhood.

At the next level, pattern recognition is the key to understanding grouped elements or combinations of pitches and rhythmic structures. The goal of aural skill training is to equip listeners to hear sound as meaningful patterns. Aural recognition is the ability to identify contextually a sound fragment or chunk of music. I refer to this as hearing in scale degrees. There is some debate as to whether practicing the identification of atomic particles, such as intervals or individual chord qualities, is valuable in itself, compared to dealing with individual musical elements in a larger tonal context. Both have value at different stages of development. As mentioned earlier, fluency with the basic building blocks is a precursor to more advanced aural discrimination, but does not need to be done outside of a musical context.

Strategies for Teaching Music Fundamentals

In teaching basic aural skills, grouping families of constructs that have some similarity but clear differences is a successful tactic. For example, work with upward intervals first, then downward. Avoid overuse of a crutch, such as using the first two notes of a familiar tune, to form the basis of understanding. This forces a context that is not necessarily appropriate. Group triads by stability (major/minor), versus their inherent tendency to resolve (diminished/augmented). If a student can audiate a major or minor triad, and compare external stimuli to their internal compass reliably, they learn to trust their ears. Compare the five common types of seventh chords to one another when learning to distinguish them aurally. It is better to teach the identification of soprano and bass factors in 4-voice chords while

they are moving from one to another, rather than in isolation. In general, aim the teaching towards sources of directed motion, not frozen instances. Finally, the primary goal of basic ear training is to instill confidence in the student that their process for identifying sounds accurately is going to yield the correct result every time. Once a student believes this, they make virtually no errors.

Strategies for Melodic Dictation

In taking melodic dictation students should group pitches into recognizable patterns and focus on identifying the pitches as scale degrees in the key. Tonal dictation is hindered by reliance on identifying intervals between pitches. Encourage students to fiercely hold on to the tonic and dominant of the key as structural points of reference, and use them as a scaffold for other pitches. The idea of internal points of reference, or a mental matrix, is a key to all aural recognition.

The first step in taking melodic dictation is to listen and memorize, NOT to write anything down. Some students prefer to write just the rhythmic values first, and then fill in scale degree numbers below. It is helpful to think about points of arrival, make quick estimates about the contour of a line, and refine it later. Exercises in error detection have practical applications. Hearing a melody and identifying wrong written notes, or vice versa, is something every conductor must be able to do. Reminding students that these exercises are preparing them for the work a musician does every day helps keep motivation alive. Another great activity for training the musical mind is to have students notate familiar songs without a piano or any external sound source. Testing this skill may be the quickest way to measure comprehensive musicianship.

Strategies for Harmonic Dictation

Linear thinking is advised, just as if students were taking dictation of melodies. I usually start with the soprano voice, followed by the bass. As I play the excerpt, I emphasize a different voice each time it is played. After getting the outer voices, students should identify chord quality and inversion, and feel the flow from pre-dominant to dominant to tonic that pervades most tonal music. The final step is to check for part writing errors. It is very difficult to hear inner lines in a four-part texture played on a piano, or any monochromatic instrument. This is compounded by instruments with strong overtones above bass notes. Ideally, contrasting timbres would be used for each voice. Correctly identifying the bass line is typically most difficult for students, and singing along with it while playing chorale-style music helps build this aural skill. Starting with two-part and three-part music is a good way to build confidence.

Strategies for Sight Singing

There are two separate issues to address in sight singing. The first is reading the notation. This involves thinking in the key and audiating the sound, while mentally grouping and interpreting the symbols. The second issue is vocalizing the sound. Vocal quality is not of great concern, but correct intonation is. In the beginning, I recommend singing at slow tempos and holding each note long enough to "steer" it toward the pitch center. It is a good habit to practice silently, alternating with singing aloud. Wind and string players, as well as vocalists, must hear the pitch they plan to produce before playing or singing it. I liken this to shooting with a bow and arrow; to hit the bulls eye, you must know where it is.

Fluent sight singing depends on pattern perception, and the objective is for students to build a large vocabulary of known patterns that are typically found in tonal music. I often have students sing a pattern of pitches in which tendency tones resolve to the tonic triad to establish a firm grounding in the key before beginning to sing. Students should NEVER play a melody before sight singing it. This reinforces their ability to mimic sounds, and inhibits the development of audiation. If, after several tries, an interval in the music cannot successfully be sung (or heard), one or two pitches can be given as clues. This troublesome leap should then be drilled so that it becomes second nature. Descending perfect fourths seem to pose the greatest difficulty, in general.

A recommended pattern to sing as a way of establishing the tonality is shown below:

DO - MI - SOL - MI - DO
FA - MI - LA - SOL - TI
DO - RE - DO - SOL - DO

For further information I recommend reading a dissertation that addresses pattern recognition in aural skills training written by Laurdella Foulkes-Levy, entitled *A Synthesis of Recent Theories of Tonal Melody, Contour, and the Diatonic Scale: Implications for Aural Perception and Cognition*. (1996)

One effective way to engage students in the activities of memorizing and thinking in scale degrees is to have them improvise collectively with solfege syllables. In this activity, one student sings a short 5 – 6 note melody of his or her own devising aloud. The next student sings it back and then creates a variation on it in solfege. This process continues until all students have sung. Every one conducts the same tempo, and they allow for a few beats between each rendition. In this fashion, it is also a rhythmic, musical activity. Call and response methods such as this are very effective at thoroughly engaging students. I also have keyboard harmony classes perform similar activities.

An article that outlines similar activities was written by Luciana Del Ben and Regina Antunes Teixeira Dos Santos, entitled *Contextualized Improvisation in Solfège Class*, published in the *International Journal of Music Education*, Vol. 22, No. 3, 266-276 (2004).

I have found that singing canons in class is a great way to help students grow individually and also to join a larger external context of harmony and rhythm as they sing. I do not recommend spending time in class with all the students singing the same melody together. During this activity one or two singers find the pitch first because they are more skilled, and all the others imitate them instantly. This actually breaks down their individual capacity to audiate and sight sing. Vocalists who work with choral directors who play their parts on the piano to teach the music are severely handicapped, and have the hardest time learning to sight sing. They are looking externally for the cues that their thinking musical mind should be providing.

Solfège Systems

In tonal music, the most valuable method of sight singing is functional. Intervallic distances between notes are meaningless, as are discreet bits of information in a stream of data. The moveable “DO” system develops hearing skills, and provides a functional context for each pitch. The fixed “DO” system develops music reading skills, and note identification. The “LA-minor” system does not reinforce tonic awareness.

Non-Tonal Ear Training

Some theorists contend that there is usually some structural frame of pitch reference in music. In most cases, this can be demonstrated, if only as pitch centrality. It is useful for students to learn to identify common vertical structures found in contemporary music. I recommend starting with an assortment of trichords, or three-note PC sets such as [0, 1, 6]. They each have a distinctive flavor, and many students who work at it can assimilate a large vocabulary of them. Quartal structures are also useful to practice. Howard Hanson’s system of chord chemistry provides an excellent way to define atonal structures. Each interval class is given a letter, and superscript numbers identify the quantity if there is more than one of a particular class. The letters used in this system related to IC is as follows:

P = P4, P5, P8
M = M3, m6
N = m3, M6
S = M2, m7
D = m2, M7
T = tritone

In this system of classification, the notes C, D and G (or any transposition of them) would be designated by the symbol P²S.

Basic Instructional Tenets

Some final pieces of advice for developing aural skills:

1. Always establish a strict tempo and keep it throughout the exercise.
2. Conduct while sight singing, using standard patterns with a downward ictus.
3. Never play a melody that you are planning to sight sing before singing it.
4. Always sing music in the key in which it is written, transposing by octave if necessary.
5. When taking melodic dictation, memorize before writing, and sing it back silently.
6. Practice hearing tonal music as scale degrees in a key at all times.
7. Motivate students to practice independently, if only for a few minutes each day.

Appendix A

Bibliography of print resources on Music Cognition

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Empirical Musicology Review

Journal of Music Perception and Cognition

ESCOM Newsletter

Journal of the Acoustical Society of America

Perception & Psychophysics

Contemporary Music Review

Journal of Experimental Psychology - Human Perception and Performance

Journal of Research in Music Education

Journal of New Music Research

Journal of Experimental Psychology - Learning, Memory, and Cognition

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Empirical Studies in the Arts

Computer Music Journal.

Music Theory Spectrum

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APPENDIX B

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APPENDIX B

Music References

Texts

Karpinski, Gary S. *Aural Skills Acquisition: The Development of Listening, Reading, And Performing Skills In College-Level Musicians*. NY: Oxford University Press, 2000.

This book is a hands-on investigation of the stages musicians go through as they learn to hear, read, and perform music. It draws on the latest research in music perception and cognition, music theory, and pedagogy, along with centuries of insight from music theorists, composers, and performers.

Michael R. Rogers. *Teaching Approaches in Music Theory*. Southern Illinois University Press, 1984.

The underlying assumption is that the common distinction between written skills (part-writing, composition, and analysis) and aural skills (dictation and sight singing) is an artificial one.

Dissertation

Foulkes-Levy, Laurdella. *A Synthesis of Recent Theories of Tonal Melody, Contour, and the Diatonic Scale: Implications for Aural Perception and Cognition*. 1996

ABSTRACT:

This dissertation deals with the application of several recent theories of music to musicianship training. The theories concern: (1) the hierarchical nature of tonal melody, (2) reduction techniques which reveal common tonal patterns at various levels of structure, (3) the relationship of these common patterns to theories of the diatonic system, and (4) pedagogical concepts for developing musical skills. The theorists whose work most clearly represents each of these areas include Heinrich Schenker (tonal melody as hierarchical), Fred Lerdahl and Ray Jackendoff (rhythmic reduction), Robert Morris (contour reduction), John Clough (the diatonic system), and Erzsébet Hegyi (aural skills pedagogy).

Musicianship training focuses primarily on features that are on the surface of the melody. Schenker's theories reveal the hierarchical nature of tonal music, but deal more thoroughly with middleground and background structures. Therefore, reduction techniques that concentrate on levels close to the surface of the melody are more important here.

Patterns that are revealed at various structural levels are common tonal ones. These patterns are referable to (ordered) diatonic segments as members of various segment classes. A theory is devised to accommodate various classes of pitch and pitch-class segments and unordered pitch-class sets. The patterns become the focus for aural training exercises and activities designed primarily to improve skills in ear training, sight singing, improvisation, and dictation.

Article

Luciana Del Ben and Regina Antunes Teixeira Dos Santos. *Contextualized Improvisation in Solfège Class*. *International Journal of Music Education*, Vol. 22, No. 3, 266-276 (2004).

This article presents practitioner research dealing with improvisation in solfege as a creative alternative for the development of music perception. Solfege practice, conceived as a personal construction of a melody, requires an attitude that embraces aural sensitivity to the spatial and temporal dimensions of a melodic line, identification of problems, hypothesizing solutions and experimenting with strategies. In contextualized improvisation in solfege, the melody recently read and understood is manipulated in order to find different ways of embellishing its structure without changing the basic character. Examples extracted from solfege classes in a higher education context are illustrated and discussed. Improvisation on solfege exercises demands awareness of melodic contour at the same time as each note is being named, coherence and rhythmic freedom, providing the means for the students to develop the musical structures dealt with in the studied exercises.